LIGHTNING PERFORMANCE STUDY ON EXISTING 275kV OVERHEAD LINE IN TNB SYSTEM

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Dedicated to my lovely wife and children

ACKNOWLEDGEMENT

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ABSTRACT

Lightning is the primary cause of tripping for most overhead power transmission lines. Few methods have been discovered to estimate the lightning performance of a transmission line. However these methods are not properly defined due to the nature of lightning which is difficult to analyze and model. Studies are continually being done to discover alternative methods that can be implemented to improve the lighting performance of transmission lines in addition to the standard methods such as adding Overhead Ground Wires (OHGW), reducing ground resistance, adding counterpoise and increasing insulation. In this project, a case study on lightning performance for an existing 275kV overhead transmission line in TNB system which tripped on numerous occasion due to lightning will be simulated. The lightning performance will be simulated using TFLASH software and result will be analyzed. The influence of parameters such as tower footing resistance, ground flash density and tower lightning arrestor on lightning performance of a selected transmission line will be analyzed and appropriate corrective measures will be discussed as well.

ABSTRAK

Kilat merupakan punca utama berlakunya pelantikan pada kebanyakan talian penghantaran. Walaupun beberapa kaedah telah ditemui untuk menganggarkan prestasi kilat sesuatu talian penghantaran, namun ianya tidak dapat ditakrifkan dengan tepat disebabkan kejadian kilat itu sendiri sukar dianalisa dan dimodelkan. Namun begitu, kajian masih diteruskan untuk menemui kaedah-kaedah yang dapat dilaksanakan untuk mempertingkatkan prestasi kilat talian penghantaran selain daripada kaedah-kaedah standard yang sudah terwujud seperti tambahan OHGW, mengurangakan rintangan tanah, menambah counterpoise serta menambahkan penyalutan. Projek ini membuat satu kajian berkenaan prestasi kilat pada talian penghantaran 275kV yang sedia ada dalam sistem TNB dan sering terpelantik disebabkan kejadian kilat. Kajian prestasi kilat ini akan dilaksanakan menggunakan perisian TFLASH dan keputusannya akan dianalisa. Pengaruh parameter-parameter seperti rintangan kaki menara, kepekatan kilat serta pemasangan penangkap kilat pada menara akan dianalisa dan tindakan pembaikan yang sesuai juga akan dibincangkan.